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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/615,938	07/13/2000	Kenji Shimazaki	32809	3985

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EXAMINER	
BARAN, MARY C	

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 12/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/615,938	SHIMAZAKI ET AL.	
	Examiner	Art Unit	
	Mary Kate B Baran	2857	

-- Th MAILING DATE of this c mmunication appears on th cover she t with th correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. This action is responsive to the Amendment filed 21 January 2003. Claims 1-8 are pending.

Specification

2. The substitute specification filed 14 October 2003 has been entered.

3. The disclosure is objected to because of the following informalities:

(a) On page 1 line 9, page 9 line 5 and page 22 line 14 "highlyaccurate" should be – highly accurate –.

(b) On page 14 line 21, "previouslyprepared" should be – previously prepared –.

(c) On page 15 line 15, "402using" should be – 402 using –.

(d) On page 19 line 3, "itially 0" should be – initially 0 –.

(e) On page 20 line 2, "previouslydescribed" should be – previously described –.

(f) On page 20 line 17, "particularly a" should be – particularly to a –, and "is provided" should be – are provided –.

(g) On page 21 line 5, "902based" should be – 902 based –.

(h) On page 22 line 7, "EMIthat" should be – EMI that –.

Appropriate correction is required.

Drawings

4. The drawings were received on 14 October 2003. These drawings are accepted by the Examiner.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Finman (U.S. Patent No. 5,117,377) in view of Burch et al. (Pattern-Independent Current Estimation for Reliability Analysis of CMOS Circuits) (hereinafter Burch).

Referring to claim 1, Finman teaches analyzing electromagnetic interference which develops in an LSI (see Finman, column 1 lines 7-12), comprising a correction step of correcting the amplitude of a signal in each node (see Finman, column 5 lines 3-8), an addition step of adding the signals of all nodes together within a period of time corresponding to one cycle, provided that the thus-corrected signal appears at the time the signal arrives at the node (see Finman, column 5 lines 6-16), and a frequency analysis step of analyzing the frequency of the signal, calculated in the addition step (see Finman, column 6 lines 64-68). The examiner interprets the term "generic analyzer" as disclosed in Finman to mean the same as the claimed term "frequency analyzer" (see Finman, column 12 lines 29-34). Finman does not teach generating a

current waveform, and calculating the current, which has been prepared for each change in each node, in accordance with the probability of variation in each node.

Burch teaches providing a current waveform for each node (see Burch, page 2 lines 7-9), and calculating the current in accordance with the probability of change in each node (see Burch, page 3 lines 2-5).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Finman to include the teachings of Burch, because calculating the current based on the probability of change would have allowed the skilled artisan to determine the worst case current waveform (see Burch, page 1 lines 26-28).

Referring to clam 2, Finman further teaches correcting the amplitude of a signal in each node (see Finman, column 5 lines 3-8), but does not teach, a current estimation waveform, or monitoring the change in each node in accordance with a probability of variation and a distribution with respect to time.

Burch teaches a current estimation waveform (see Burch, page 2 lines 7-9), and monitoring the change in each node in accordance with a probability of variation (see Burch, page 3 lines 22-31) and a distribution with respect to time (see Burch, page 4 lines 7-10).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Finman to include the teachings Burch because monitoring the change in each node in accordance with a probability of variation and a time distribution

would have allowed the skilled artisan to derive an accurate current waveform (see Burch, page 4 lines 16-17).

Referring to claims 3 and 4, Finman teaches all the features of the claimed invention except for each node having a plurality of signal transmission paths, and each of the current waveforms is calculated in consideration of a case where each of the paths has a unique probability of change and signal arrive time.

Burch further teaches each node having a plurality of signal transmission paths (see Burch, page 2 lines 22-23), and each of the current waveforms is calculated in consideration of a case where each of the paths has a unique probability of change (see Burch, page 3 lines 22-31) and signal arrive time (see Burch, page 4 lines 7-10).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Finman to include the teachings of Burch, because calculating current with respect to a unique probability of change would have allowed the skilled artisan to derive an accurate current waveform (see Burch, page 4 lines 16-17).

6. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamaki et al. (U.S. Patent No. 5,784,285) (hereinafter Tamaki) in view of Burch et al. (Pattern-Independent Current Estimation for Reliability Analysis of CMOS Circuits) (hereinafter Burch).

Referring to claims 5 and 7, Tamaki teaches analyzing electromagnetic interference which develops in an LSI (see Tamaki, column 1 lines 5-9), comprising a

waveform formation step forming a waveform (see Tamaki, column 4 lines 34-38) which has been prepared as if the waveform randomly arises within a plurality of predetermined cycles (see Tamaki, column 4 lines 17-22) adding the thus prepared waveforms to thereby derive a new waveform (see Tamaki, column 4 lines 16-28), and analyzing the frequency of the waveform, thereby determining a noise characteristic of EMI (see Tamaki, column 5 lines 1-20). Tamaki does not teach calculating the current, which has been prepared for each change in each node, in accordance with the probability of change in each node and a time at which a signal arrives at each node.

Burch teaches calculating the current in accordance with the probability of change in each node (see Burch, page 3 lines 22-31) and a time at which a signal arrives at each node (see Burch, page 4 lines 7-10).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Tamaki to include the teachings of Burch, because calculating the current based on the probability of change would have allowed the skilled artisan to determine the worst case current waveform (see Burch, page 1 lines 26-28).

Referring to claims 6 and 8, as noted above Tamaki teaches all the features of the claimed invention except that each node has a plurality of paths and a current is calculated in consideration of a case where each of the paths has a unique probability of change and signal arrival time.

Burch further discloses a method wherein each node has a plurality of paths (see Burch, page 2 lines 22-23) and a current is calculated in consideration of a case where

each of the paths has a unique probability of change (see Burch, page 3 lines 22-31) and signal arrival time (see Burch, page 4 lines 7-10).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Tamaki to include the teachings of Burch, because calculating current with respect to a unique probability of change would have allowed the skilled artisan to derive an accurate current waveform (see Burch, page 4 lines 16-17).

Response to Arguments

7. Applicant's arguments filed 14 October 2003 have been fully considered but they are not persuasive.

Applicant argues that the prior art does not teach "analyzing electromagnetic interference". However, this is not the case. Finman teaches measuring (see Finman, column 4 lines 62-65) and analyzing (see Finman, column 4 lines 49-50) electromagnetic signals from a signal source (see Finman, column 4 lines 65-67). Likewise, Tamaki et al. (hereinafter Tamaki) teaches analyzing an electromagnetic wave as it is radiated from an electronic device (see Tamaki, column 1 lines 5-9). Applicant argues the differences between electromagnetic interference and an electromagnetic signal; however, electromagnetic interference is an electromagnetic signal. Furthermore, any language which would distinguish between the two is not specified in the claim. In addition, Applicant argues that the prior art does not teach calculating the electromagnetic interference based on a mathematical simulation of the LSI, and instead teaches calculating the EMI based on measured data. The Examiner

agrees that calculating the electromagnetic interference based on a mathematical simulation of the LSI is not taught in the prior art of record, the Examiner notes, however, this language is not contained in the claims. Therefore, the claims as currently presented remain rejected under the cited art.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary Kate B Baran whose telephone number is (703) 305-4474. The examiner can normally be reached on Monday - Friday from 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S Hoff can be reached on (703) 308-1677. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

MKB

MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800